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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,365	10/21/2003	Dennis J. Schloeman	10992119-4	4247
7590 05/06/2004			EXAMINER	
HEWLETT-PACKARD COMPANY			NGUYEN, LAM S	
Intellectual Property Administration			ART UNIT	
P. O. Box 272400			PAPER NUMBER	
Fort Collins, CO 80527-2400			2853	

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/690,365	SCHLOEMAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	LAM S NGUYEN	2853	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 42-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25, 42-54 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/21/2003</u> . | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 6, 14, 42, 43, 47 are rejected under the judicially created doctrine of double patenting over claim 1 of U. S. Patent No. 6659581.

Claims 3, 44 are rejected under the judicially created doctrine of double patenting over claim 2 of U. S. Patent No. 6659581.

Claims 4, 45 are rejected under the judicially created doctrine of double patenting over claim 3 of U. S. Patent No. 6659581.

Claims 5, 46 are rejected under the judicially created doctrine of double patenting over claim 4 of U. S. Patent No. 6659581.

Claims 7, 48 are rejected under the judicially created doctrine of double patenting over claim 5 of U. S. Patent No. 6659581.

Claims 8, 49 are rejected under the judicially created doctrine of double patenting over claim 6 of U. S. Patent No. 6659581.

Claim 9 is rejected under the judicially created doctrine of double patenting over claim 7 of U. S. Patent No. 6659581.

Claims 10, 51 are rejected under the judicially created doctrine of double patenting over claim 8 of U. S. Patent No. 6659581.

Claims 11, 52 are rejected under the judicially created doctrine of double patenting over claim 9 of U. S. Patent No. 6659581.

Claims 12, 53 are rejected under the judicially created doctrine of double patenting over claim 10 of U. S. Patent No. 6659581.

Claims 13, 54 are rejected under the judicially created doctrine of double patenting over claim 11 of U. S. Patent No. 6659581.

Claim 15 is rejected under the judicially created doctrine of double patenting over claim 13 of U. S. Patent No. 6659581.

Claim 16 is rejected under the judicially created doctrine of double patenting over claim 12 of U. S. Patent No. 6659581.

Claim 17 is rejected under the judicially created doctrine of double patenting over claim 14 of U. S. Patent No. 6659581.

Claim 18 is rejected under the judicially created doctrine of double patenting over claim 15 of U. S. Patent No. 6659581.

Claims 19, 21 are rejected under the judicially created doctrine of double patenting over claim 16 of U. S. Patent No. 6659581.

Claim 20 is rejected under the judicially created doctrine of double patenting over claim 17 of U. S. Patent No. 6659581.

Claim 22 is rejected under the judicially created doctrine of double patenting over claim 18 of U. S. Patent No. 6659581.

Claims 23, 25 are rejected under the judicially created doctrine of double patenting over claim 19 of U. S. Patent No. 6659581.

Claim 24 is rejected under the judicially created doctrine of double patenting over claim 20 of U. S. Patent No. 6659581.

The above claims, if allowed, would improperly extend the "right to exclude" already granted in the patent

The subject matter claimed in the instant application is fully disclosed in the patent and is covered by the patent since the patent and the application are claiming common subject matter, as follows: An ink jet printhead comprises a fire pulse generator circuitry that generates plurality of fire signals, each has a series of fire pulses.

Furthermore, there is no apparent reason why applicant was prevented from presenting claims corresponding to those of the instant application during prosecution of the application which matured into a patent. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 8-15, 42-46, 49-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (EP 0 674 933 A2) in view of Imanaka et al. (US 6116714).

Miller et al. disclose an inkjet printhead (FIG. 6, element 34), including:

nozzles (FIG. 7, elements n1-n48);  
firing resistors (FIG. 1B, corresponding heaters with nozzles n1-n48); and  
fire pulse generator circuitry (FIG. 12, element 82) responsive to a start fire signal (FIG. 12, element 80) to generate a plurality of fire signals (FIG. 12, elements 85-87) each having a fire pulse (FIG. 13, elements A-C), by controlling the initiation of the fire pulse, wherein each fire pulse controls timing and activation of electrical current through selected firing resistors to thereby control ejection of ink drops from the nozzles (FIG. 12: each fire signal controls the initiation of an ink ejection to cause sets of nozzles within the print head to fire at slightly different times (Abstract)).

Miller et al. do not disclose wherein a plurality of fire signals each having a series of fire pulses and by controlling the initiation and duration of the fire pulses and the dead-time between the fire pulses to control ejection of ink drops from the nozzles, wherein the fire pulse generator circuitry comprises pulse-width/dead-time registers for holding pulse-width/dead-time values, wherein the duration/dead-time of the fire pulses is based on the pulse-width/dead-time values,

**(Referring to claims 2, 10-11, 43, 45, 51-52)**, counters each preloaded and responsive to the initiation of a corresponding fire pulse to count down to a corresponding count value representing the duration/dead -time of the corresponding fire pulses **(Referring to claims 3-4, 12-13, ,44, 46, 53-54)**.

Imanaka et al. disclose a printing system having a carrier and N printheads including nozzles and firing resistor (FIG. 17) and a fire pulse generator that generates a plurality of fire signals each having a series of fire pulses, wherein the initiation and duration of the fire pulses are adjusted to control the ejection of ink drops from the nozzles (FIG. 14), wherein the duration of the fire pulses is based on the pulse width values stored in pulse width registers (FIG. 27, element 335) and the initiation is based on a count down value from a preloaded counter (FIG. 27, element 330, column 20, lines 27-30, and column 18, lines 15-22).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing device disclosed by Miller et al. such that each fire signal includes a series of fire pluses and the initiation and duration of the fire pulses are adjusted to control the ejection of ink drops as disclosed by Imanaka et al. The motivation doing so is to make it possible to print a very high-quality image without the occurrences of the uneven density as taught by Imanaka et al. (column 13, lines 4-6).

**Miller et al. also disclose the following claimed invention:**

**Referring to claims 8-9, 49-50:** wherein an active start fire signal is provided to the fire pulse generator circuitry prior to each time a fire pulse is generated or only at the beginning of a print swath or a selected firing sequence (FIG. 13, FIG.16).

**Referring to claim 15:** wherein the first start fire signal is provided from a printer controller located external from the inkjet printhead assembly (FIG. 11, element 72).

2. Claims 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (EP 0 674 933 A2) in view of Imanaka et al. (US 6116714), as applied to the rejection above, and further in view of Umezawa et al. (US 6276776).

Miller et al., as modified, disclose the claimed invention as discussed above, except a carrier, N printheads disposed on the carrier, each printhead including nozzles and firing resistors, and a module manager disposed on the carrier and implemented in a integrated circuit, wherein the module manager is adapted to receive a serial input data stream and corresponding input clock signal from a printer controller external from the inkjet printhead assembly and to demultiplex the serial data stream into N serial output data streams and to provide the N serial output data streams and N corresponding output clock signals based on the input clock signal to the N printheads.

Umezawa et al. disclose a printing apparatus having a carrier, four printheads disposed on the carrier, each printhead including nozzles and firing resistors, and a module manager disposed on the carrier and implemented in a integrated circuit (FIG. 1, elements 29, 9A-D), wherein the module manager (FIG. 1, element 29) is adapted to receive a serial input data stream from a printer controller external from the inkjet printhead assembly (FIG. 1, element 100) and to demultiplex the serial data stream and clock signal into four pulse trains and clock signals to provide to corresponding four printheads (FIG. 1 and column 6, lines 5-63).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the printing device disclosed by Miller et al., as modified,



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such that including the module manager to receive a serial input data stream and an input clock signal and to demultiplex the serial data stream and the clock signal into N serial output data streams and clock signals to provide to the N printheads as disclosed by Umezawa et al. The motivation of doing so is to provide an inkjet printer which can prevent occurrence of degraded image quality due to temperature of a plurality of recording heads as taught by Umezawa et al. (column 1, lines 36-40).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN

May 3, 2004



**HAI PHAM  
PRIMARY EXAMINER**